

**METHOD AND SYSTEM OF THERMOACOUSTIC COMPUTED
TOMOGRAPHY**

5 ABSTRACT

The present invention is a directed to method and system of TCT imaging whereupon data associated with unmeasured or inadmissible transducer locations is determined from data acquired at measured or admissible transducer locations.

- 10 The invention analyzes measured TCT data associated with several transducer locations to provide an estimate of unmeasured data so as to complete a full data set for image reconstruction. In this regard, by measuring TCT data at many points on the surface of a hemispherical bowl or sphere in which an imaging object is placed, mathematical coefficients may be determined for the TCT data as a function of transducer location.
- 15 From these coefficients, the unmeasured transducer locations may be evaluated such that data associated with the unmeasured transducer locations may be estimated and utilized for image reconstruction to improve image quality as well as improve the diagnostic sensitivities or capabilities of the TCT system.